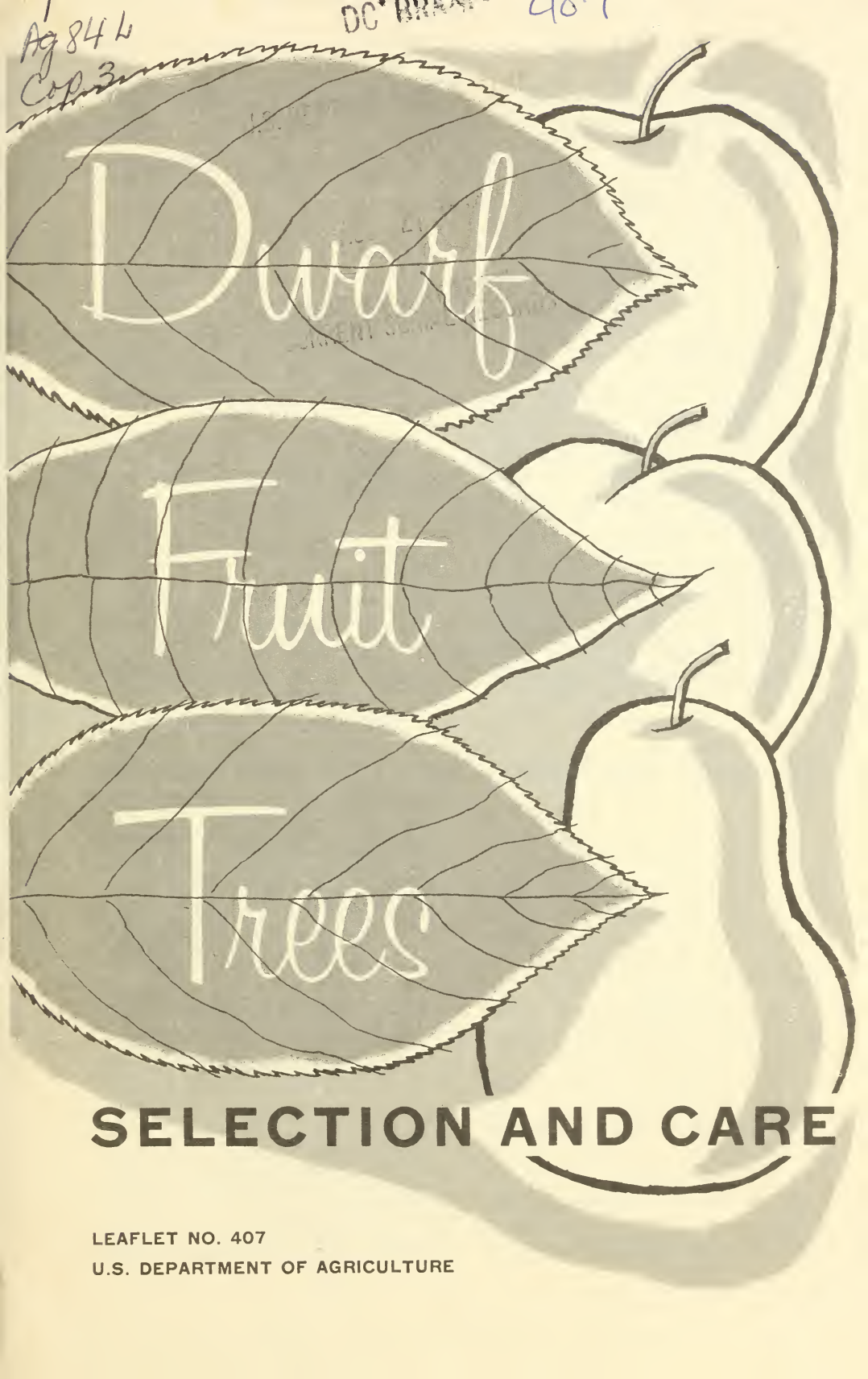


Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Ag 84 L
Cop 3
DC 407
407



Dwarf Fruit Trees

SELECTION AND CARE

LEAFLET NO. 407

U.S. DEPARTMENT OF AGRICULTURE

Dwarf Fruit Trees

SELECTION AND CARE

Dwarf fruit trees are developed in the nursery to meet a demand for trees that require less growing space than those of standard size.

Dwarf apple and pear trees are widely available. The selection of varieties is much greater in apples than in pears. Peach, plum, cherry, apricot, and nectarine trees have not been produced extensively as dwarfs and little is known of their performance. The standard trees of these stone fruits (except sweet cherries) are small in comparison with standard apple trees and can be restricted in size by pruning.

Dwarfs begin to bear earlier than standard trees. Dwarfing does not affect the size or quality of the fruit.

DWARFING METHODS

Nurserymen put considerably more work into developing dwarfs than into growing standard trees. They produce standard trees by planting seeds, growing fruit seedlings, and budding or grafting the seedlings to a desired variety. For example, they grow an apple seedling and bud or graft it to the McIntosh apple variety, or they grow a pear seedling and bud or graft it to the Seckel pear variety.

Two methods are in use for producing dwarf fruits. One method is to bud or graft the tree to the root of a small-growing fruit variety, such as Doucin or Paradise apple. Another is to graft a piece of stem of a small-growing fruit tree between the root and the top of the tree to be dwarfed.

Roots, or so-called rootstocks, are used to dwarf many kinds of fruit trees. Stems, also known as interstems or intergrafts, are used at present only for dwarfing apple trees.

ROOTSTOCKS AND INTERGRAFTS

Apples

Rootstocks have been investigated more thoroughly for apples than for other fruits. The East Malling Fruit Research Station, East Malling, Kent, England, has done outstanding research in this field. They have developed a series of rootstocks that give different degrees of dwarfing for apple trees. The rootstocks are classified as very dwarfing, which produce very small trees, and semidwarfing, which produce trees intermediate in size between full dwarf and standard tree.

A tree is identified at the nursery by the variety and the East Malling Roman numeral assigned to the rootstock on which the tree is grown.

Malling IX has been widely tested in this country and is the best of the full-dwarfing stocks. Trees grow 6 to 8 feet high in 20 years if they are planted in good soil and given good care. Such trees produce up to a bushel or more of apples a year.

Malling VIII is a less satisfactory full-dwarfing rootstock than Malling IX.

Malling VII produces trees a little

larger than trees on Malling IX. Malling II gives larger trees than Malling VII. Full-bearing trees from both these semidwarfing stocks may produce 3 or more bushels of apples.

Trees dwarfed by the intergraft method are not classified and are identified at the nursery as interstem or intergraft trees. Stems produced from the Malling VIII rootstock are sometimes used by nurserymen as the interstem piece. The degree of dwarfing apparently increases with the length of interstem used.

Pears

Pear trees are dwarfed by using the Angers quince root. Some varieties, including the popular Bartlett, do not unite well with quince. A compatible variety, such as Beurre Hardy, is first worked on the quince. The desired variety is then budded to the Beurre Hardy. Trees about half the size of standard pear trees are produced.

USES OF DWARFS

Dwarf fruit trees are desirable where growing space is limited and labor cost for handwork relatively low. They are used extensively for commercial fruit production in northern Europe, where such work as spraying, fruit thinning, pruning, and picking is done by hand. There is little room for equipment between close-planted dwarfs.

Commercial grower

Full dwarfs have these disadvantages in commercial fruit production as carried on in the United States:

(1) It costs more to start an orchard with dwarfs than with standard trees. The cost of a dwarf at the nursery is usually at least twice the cost of a standard tree. A grower must plant more dwarfs than standard trees per acre to get yields that pay.



BN-26561

A tree propagated for dwarfing by use of an interstem piece. The root (A) is a seedling first budded to East Malling VII (B), then to Golden Delicious (C).

(2) Some rootstock dwarfs are much less firmly anchored in the soil than standard trees. They may require permanent support with stakes or wires to keep them from blowing down in high winds. Intergraft dwarfs grow without need of support.

Some orchardists in this country are planting semidwarf apples because they want smaller trees. Others use them as filler trees, particularly in orchards planted with late-bearing apple varieties. The dwarfs are planted between standard trees, left in about 15 years, and then removed. Yield from the dwarfs increases production during the early life of an orchard.

Home grower

As compared with standard fruit trees, dwarfs offer these advantages to the home grower:

(1) They usually begin to bear 1 or 2 years earlier.

(2) Several varieties of fruit with different seasons (times of the year) for ripening can be planted in the space required for a standard tree.

(3) All the work around dwarfs can be done with less orchard equipment.

(4) Dwarfs can be pruned and trained as ornamentals in landscaping—on wires or trellises, against walls, or along a walk or drive.

PLANTING AND CARE

Dwarf fruit trees are usually a year old when you buy them at the nursery. They may be single stems or may have two or three branches along the main stem.

Planting

Plant in early spring if you live where winters are severe; in late fall or early spring if you live in a warmer climate.

Place full-dwarf apple trees 10 to 12 feet apart each way, or 6 to 8 feet apart in rows with 15 feet between them. Place semidwarf apple trees about 20 feet apart each way. Place dwarf pear trees 15 to 18 feet apart.

For best results, dwarfs should be planted in soil that is moderately open and well drained—not in fine-textured clay or in soil so coarse that it does not retain moisture.

Pack good topsoil firmly around the roots. Don't use fertilizer around the roots at planting.

Plant dwarfs at the depth at which they stood in the nursery row, or a little higher. You can see the point where rootstock dwarfs unite with the fruit

variety. At this point you can see a change in color of bark and often a slight curve in the trunk. Be sure the union is aboveground.

Fertilizing

After trees start to grow in early spring, scatter about each tree, from the trunk out, 1 or 2 pounds of garden fertilizer fairly high in nitrogen. Use increasing amounts each year in late fall or early spring.

Mulching

Mulching is an excellent practice for growing dwarf or other fruit trees. Mulch with straw, grass clippings, or other organic material. Mulch deep enough around each tree to smother grass and weeds. Keep mulch a little away from the trunk and hoe the ground immediately around the tree. You will avoid attracting mice by keeping mulch away from the tree. Mice and rabbits damage trees by eating the bark and girdling the roots.

If trees are not mulched, they should be hand-cultivated to keep down weed or grass growth within 3 to 4 feet of the trunk.

Pruning and training

When you set out dwarfs, prune them back to keep the top in balance with the roots. A loss of roots always occurs in transplanting. If the trees are single stems 3 to 4 feet high, prune them back to about 30 inches. Generally, no further pruning is needed during the first year.

At the beginning of the second year of growth, select four or five well-spaced branches that you want to keep on each tree and remove the rest. Trees to be grown as natural bushes need no further pruning except to thin out branches.

If you are training a tree on a trellis or wall, fasten branches to wires or the



BN-12957-X

McIntosh apple on East Malling VII rootstock at 10 years of age.

wall during the first year. Remove new branches that form and grow upright; cut them to short stubs. This encourages spur-type growth.

Fruit thinning

Thin out excess fruits by picking off the small fruits. An excess is anything more than one fruit for each 6 to 8 inches along a branch. Thin within 20 days after trees start to bloom.

If the fruit is not thinned, dwarfs may set more fruit than they can carry and develop to good size and quality. If the trees bear excess fruit, they may not bloom the next year.

PEST CONTROL

Apple and pear trees must be protected from diseases, insects, and weeds to get high quality fruit.

Sprays are recommended rather than dusts for insect and disease control because they are more effective and last longer. It is important to cover the surfaces of all leaves and fruit with a fine, mist-type spray.

The climate and other environmental conditions in your area usually determine the dosage rate and the number of applications needed for effective control. In areas of frequent rains and high humidity, 10 or more applications may be required.

Never buy or use pesticides without reading the label. The package indicates rates and directions for use and should be followed for best results.

Diseases

Fungicide applications on fruit trees should begin when a small amount of color (prepink) is visible in the blossoms. Make the second application just before the blossoms open (pink stage). Apply the third spray application when the petals have fallen. Subsequent applications (fruit-cover sprays) should be applied at intervals of 7 to 20 days, depending on the weather.

The principal diseases of these crops can be controlled by the use of chemicals listed in this section. For most home gardeners, it is best to use formulations containing fungicides and in-

secticides. These are called all-purpose sprays.

Some of the more serious diseases of apples and pears and the fungicides that can be used for their control are as follows:

<i>Crop and disease</i>	<i>Fungicide</i>
Apple	
Apple scab	captan, dodine, glyodin, thiram
Black rot and bitter rot	captan, folpet
Rust	ferbam, zineb
Pear	
Pear scab	ferbam, ziram (West Coast only)
Pear leaf spot and sooty blotch	ferbam
Apple and Pear	
Fire blight	streptomycin formulations
Powdery mildew	sulfur

Insects

Many species of insects attack fruit trees. Some of the more serious pests of apples and pears and the insecticides for their control are as follows:

<i>Crop and insect</i>	<i>Insecticide</i>
Apple	diazinon, methoxy-chlor
Apple maggot	
Pear	
Pear leaf blister mite	diazinon, endosulfan
Plum curculio	methoxychlor
Apple and Pear	
Aphids	malathion, diazinon
Codling moth	carbaryl, imidan
Mites	dicofol, tetradi-fon
Scales	malathion, diazinon

Further information on control of insect pests of fruit trees may be found in Home and Garden Bulletin 190, "Insects on Deciduous Fruits and Tree

Nuts in the Home Orchard," which is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. You may also wish to contact your county agricultural agent or State Agricultural Extension Service for information on insect pests and their control in your local area.

Weeds

You can conveniently control weeds in plantings of a few dwarf apple or pear trees by mechanical mowing and frequent shallow handhoeings. If you have more trees than can be easily handweeded, you should consider using an effective herbicide in your maintenance program.

You can kill growing weeds during the growing season of the trees by spraying the weeds with paraquat. Use low spraying pressure and carefully avoid contact of the spray with foliage or bark of the trees. Thoroughly wet the weed foliage. Paraquat can also be used effectively in large commercial plantings of dwarf apples and pears.

Dichlobenil can be applied in the spring or fall to obtain a relatively long period of weed control in established commercial plantings. Care must be used to avoid contact of the herbicide with the foliage or fruit of trees.

You should use a combination of mechanical cultivation, cultural practices, and herbicides to control weeds. Combining these methods will increase the effectiveness of weed control and prevent overuse of herbicides.

PRECAUTION

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Environmental Protection Agency, consult your county agricultural agent or State Extension specialist to be sure the intended use is still registered.

APPLE AND PEAR VARIETIES

Choose varieties developed for your locality and tested and recommended by your State agricultural experiment station. Those that grow well as standard trees may also be grown as dwarfs. Dwarf fruit trees, regardless of variety, are not recommended for extremely cold areas such as the northern Great Plains.

Provide cross-pollination for apples and pears by planting two or more varieties of the same fruit. The Stayman, Gravenstein, and Rhode Island Greening apple varieties are poor pol-

linizers. Be sure to plant at least two other kinds if you choose one of them.

Apples

Well-adapted apple varieties include the following:

Northern States.—McIntosh, Northern Spy, Rhode Island Greening, and Wealthy.

Southern and Middle States.—Delicious, Golden Delicious, Stayman Winesap, and Jonathan.

Anywhere.—Lodi, Yellow Transparent, Early McIntosh, and Gravenstein.

Pears

Only pear varieties resistant to fire blight, a disease, are recommended for planting east of the Rocky Mountains. They include: Magness, a high-quality dessert type; Moonglow, a high-quality dessert and canning type; Seckel, small, sweet, high quality; Waite, fair quality, good for cooking or canning.

The Bartlett is highly susceptible to fire blight. It may be grown in only a few eastern locations, such as near the Great Lakes, where it is cool in spring and fire blight is less severe.

Better quality pear varieties, including Anjou, Bartlett, and Bosc, may be grown as dwarfs west of the Rocky Mountains.

OTHER PUBLICATIONS

For additional publications on the selection, planting, and care of fruit trees, send a post card to Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Include your zip code with your return address. Farmers' Bulletin 1897, "Establishing and Managing Young Apple Orchards" is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
HYATTSVILLE, MARYLAND 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR 101



Prepared by
National Program Staff
Agricultural Research Service



All photographs by courtesy of the New York State Agricultural Experiment Station.

Washington, D.C.

Revised June 1974

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 25 cents
Stock Number 0100-03226

